Is Oil Nearing a Production Crisis?

There was fresh speculation this week that U.S. oil production may hit its peak in the next 10 years or so, and then begin a gradual decline. If so, the effect on every phase of the domestic oil industry will be profound.

Exploration, drilling, and production obviously would feel the impact. It would mean drilling more wells, drilling them deeper and at greater risk. It would mean more emphasis on all forms of secondary recovery in an effort to wrest all the oil possible from a given formation. It would mean increasing competition from foreign oil and from other fuel sources.

Refining would be affected, too. Processors would have a smaller supply of domestic crude—and probably at higher costs because of the growing expense of finding and producing oil. A diminishing supply of domestic crude could mean greater dependence on foreign sources, or it could mean increased efforts to bring oil from shale and coal into the competitive picture.

Transportation and marketing would also face a major adjustment period to meet the demands of the new situation. Eventually, for example, there could be end-use restrictions on oil to conserve it for specific purposes.

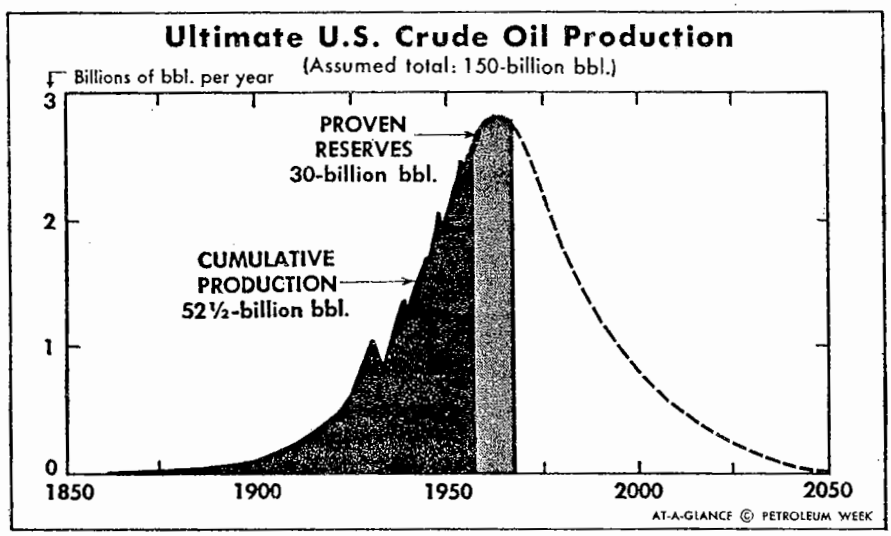
In the long run, it would mean that the oil industry would undergo a gradual metamorphosis, eventually becoming an over-all energy industry—with coal, shale oil, and perhaps even nuclear energy as sources of supply to supplement crude oil.

There have been, in the past, many predictions that this nation was beginning to run out of oil. Each time, new discoveries soon made these predictions wrong, and the nation's reserves have continued to grow.

The forecasters now aren't predicting doom or gloom. What they are doing is pointing out that if the best of current estimates are anywhere near correct, production is nearing its maximum.

Recent statements by four individual industry experts and from an API committee all underline the increasing problem of finding enough oil.

Their opinions, together with similar views expressed with growing frequency, point to a consensus that a turning point in domestic production is going to come in the not-too-distant future.



U. S. CRUDE PRODUCTION is continuing to rise steadily, but the rise is slowing, and some experts fear the peak may be only a decade or so away.

A prominent Texas geologist predicted last week that the upward spiral of U. S. production may end about 1965, to be followed by a decrease of from 5% to 10% a year thereafter.

The geologist is M. King Hubbert, chief geology consultant for Shell Development Co. He presented his views —based on long and careful research —at the spring meeting in San Antonio of the production division of the American Petroleum Institute's Southern District.

His projection of the future production curve does not differ greatly from one presented in January by the petroleum department of the Chase Manhattan Bank (PW—Jan. 27'56,p9).

The bank's computation shows that the peak of domestic crude oil production may be reached in the decade of 1965-1975.

Hubbert said: "According to the best currently available information, the production of petroleum and natural gas on a world scale will probably pass its climax within half a century, while for both the United States and for Texas, the peaks of production may be expected to occur within the next 10 or 15 years." (chart, above).

He said this raises grave policy questions with regard to the future of the petroleum industry. "It need not be emphasized that there is a vast difference between the running of an industry whose annual production can be depended upon to increase on the average of 5% to 10% a year and one whose output can be depended upon to decline at that rate," he said.

Hubbert emphasized that this does not mean this nation will become destitute of crude oil and natural gas.

"Already a deficit exists between domestic consumption and production of petroleum and its products, and this deficit is being made up by imports which already amount to about 20% of domestic production and are continuously increasing," he said.

"This deficit of domestic production with respect to requirements can only be expected to increase. However, the supplies of oil in Venezuela and those in the Middle East are sufficient to supply all additional domestic requirements for at least several decades."

Hubbert bases his predictions on estimates of ultimate potential world production of 1¼-trillion bbl. Of this, the U. S. ultimate potential would be

150-billion bbl., including wl has already been produced and what appears to remain.

For Texas, 60-billion bbl. is given as the ultimate potential reserve. Of this, 20-billion bbl. have already been produced, leaving about 40-billion bbl. for the future.

"Assuming that these estimates are even approximately correct," Hubbert said, "The production of both oil and gas in Texas are due to reach their culmination within a few years of 1965, after which there will follow a sharp decline."

Even if the ultimate U. S. potential turns out to be 200-billion bbl., instead of the 150-billion bbl. on which Hubbert based his prediction of a 1965 production peak, the overall picture that he paints would not be greatly changed. The peak of production would be delayed only a few years—perhaps to 1970.

Hubbert said current estimates on offshore oil reserves total about 17-billion bbl., but that he had increased that to 20-billion bbl. in making his projections.

Offshore oil may become a tremendous boon to U. S. production, but it faces big cost problems, a top major oil company official told Houston geologists this week.

Ira Cram, senior vice-president of Continental Oil Co., said there has been a "phenomenal" discovery record. But he warned that operators offshore have no gravy train, because of the high cost factors involved.

Unless cheaper ways of finding oil offshore are developed, the oil will not be competitive with oil elsewhere in the world, he said.

Cram "guessed" that offshore reserves probably total about 10-billion bbl. off Louisiana and another 3-billion bbl. off the Texas coast. He did not give figures on other offshore areas.

Another industry expert predicts that by 1960 the industry will have found about half the recoverable oil reserves in the U. S.—and that finding the second half will be much harder and will take longer.

This view is that of J. H. Murrell of De Golyer & MacNaughton, Dallas consultants. He spoke to members of the Society of Exploration Geophysicists at their annual midwestern meeting in Ft. Worth last week.

His estimate of 100-billion bbl. of total recoverable reserves by 1960 is higher than those of most other economists and authorities, who peg the figure at around 83.5-billion bbl. by that date.

Murrell raises this figure because of past experience, in which actual production has far surpassed earlier estimates of reserves.

Even so, Murrell feels that producers face tougher times ahead. He noted that the oil industry has spent four times as much on exploration in the past 10 years than it did in the 10 years previous. And that the cost of producing a barrel of oil has risen from 40¢ in 1934-44 to $1.13 in 1944-54—an increase of almost 200% during a 10-year period.

He called attention to another important factor: Oil fields discovered in recent years aren't as productive as fields found earlier.

He says that, while our exploration efforts are better, and thousands more oil pools have been discovered, the important thing is that the older fields of 10 years, 15 years, or even 25 years of age are carrying more of the load of total daily U. S. production.

These older fields, through secondary recovery, revivals, deeper drilling, fracturing, and other methods are stepping up their production, while the newer fields—which should be producing at their peak—are dropping off.

Formerly, he says, 1,000 fields in this country would have produced what 10,000 of the newer, smaller fields yield today.

A Tulsa geology consultant foresees a need for finding 100-billion bbl. more oil by 1980 in order to meet oil demands.

He is A. I. Levorsen, who prepared a paper on "Geological Outlook" for presentation at the Ft. Worth meeting of SEG. Because he is on a business trip to India, his paper was read by Stanley Wilcox, of Seismograph Service Corp., Tulsa.

Levorsen says the minimum estimated demand for petroleum in the U. S. will be at least twice our present consumption within the next 30 years, and that if we can not find the necessary 100-billion bbl. to add to our recoverable reserves by that time, more oil will have to be imported. That, he says, would be dangerous for this nation in an emergency because foreign sources of supply would be vulnerable.

He does not think, however, that there is any cause for alarm that we are running out of good hunting grounds for oil in this country.

He urged that all geological and geophysical data of older areas be released by the various individual companies for cooperative study.

In his opinion, valuable data now under guard in company vaults would, if released for multiple study by all, probably result in the discovery of a lot more oil—oil previously passed up because of improper interpretation of field data.

API, releasing its annual report on reserves this week, noted that the 1955 additions to proved reserves were "a far cry from the immediate postwar years, when they exceeded a billion or more barrels on at least six occasions." For details on API's report, see story on page 11.

A TEXAS GEOLOGIST, M. King Hubbert, thinks the period of declining rate of discovery has almost arrived.

A TULSA CONSULTANT, A. I. Levorsen, says the industry must find 100-billion barrels of oil by 1980.